REMARKS

The Office Action mailed January 25, 2005 has been carefully reviewed and the foregoing amendment has been made in consequence thereof.

Claims 1-27 are pending in this application. Claims 1-27 stand rejected. Claims 1, 2, 3-7, 12, 14-18, 23, and 25-27 have been amended. No new matter has been added.

Applicants respectfully traverse the statement on page 2 of the Office Action. The statement states, "The listing of references in the specification is not a proper information disclosure statement...Therefore, unless the references have been cited by the examiner on form PTO-892, they have not been considered." Applicants respectfully submit that an information disclosure statement listing the references mentioned in the specification was mailed to the United States Patent Office on October 23, 2003.

The objection to the specification is respectfully traversed. Applicants have amended the specification. Accordingly, Applicants respectfully request that the objection be withdrawn.

The objection to Claims 4, 6, 7, 12, 16-18, 23, and 25 is respectfully traversed. Applicants have amended Claims 4, 6, 7, 12, 16-18, 23, and 25. Accordingly, Applicants respectfully request that the objection to Claims 4, 6, 7, 12, 16-18, 23, and 25 be withdrawn.

The rejection of Claim 1 under 35 U.S.C. § 102(b) as being anticipated by Arfelli ("Synchrotron light and imaging systems for medical radiology") is respectfully traversed.

Arfelli describes a system in which multi-energy imaging can be performed since a small-energy bandwidth allows energy-selective methods like K-edge subtraction (KES) and dual-photon absorptiometry (DPA) (page 15, column 1). DPA is a subtraction method based on a different behavior of photoelectric and Compton effects at two widely separated energies (page 15, column 1). DPA will be added in a study of tissue characterization as carotid artery atherosclerotic plaque composition (page 15, column 2).

Claim 1 recites a method comprising "detecting components of plaque using a multi-energy computed tomography (MECT) system, wherein said detecting the components of the plaque includes generating a look-up table by using at least one phantom."

Arfelli does not describe or suggest a method as recited in Claim 1. Specifically, Arfelli does not describe or suggest generating a look-up table by using at least one phantom. Rather, Arfelli describes performing multi-energy imaging that facilitates a study of tissue characterization. Accordingly, Arfelli does not describe or suggest generating a look-up table as recited in Claim 1. For the reasons set forth above, Claim 1 is submitted to be patentable over Arfelli.

For the reasons set forth above, Applicants respectfully request that the Section 102 rejection of Claim 1 in view of Arfelli be withdrawn.

The rejection of Claim 1 under 35 U.S.C. § 102(b) as being anticipated by Walters (U.S. Patent No. 5,115,394) is respectfully traversed.

Walters describes dual energy scanning systems and methods that are a solution to many problems where two scans are made at a combined dose equal to a dose that would have been used if a single energy scan approach had been used (column 1, lines 55-59). By taking two sets of measurements, one at a high KVP (kilovolts peak) at a specified dose level and another at a low KVP and at a specified corresponding dose level, information may be obtained from which estimates may be made about distribution functions of attenuation coefficients at a given reconstruction energy (column 1, lines 59-65).

Claim 1 recites a method comprising "detecting components of plaque using a multi-energy computed tomography (MECT) system, wherein said detecting the components of the plaque includes generating a look-up table by using at least one phantom."

Walters does not describe or suggest a method as recited in Claim 1. Specifically, Walters does not describe or suggest generating a look-up table by using at least one phantom. Rather, Walters describes performing two scans at a combined dose equal to a dose that would have been used if a single energy scan approach is used. Accordingly, Walters does not describe or suggest generating a look-up table as recited in Claim 1. For the reasons set forth above, Claim 1 is submitted to be patentable over Walters.

For the reasons set forth above, Applicants respectfully request that the Section 102 rejection of Claim 1 in view of Walters be withdrawn.

The rejection of Claim 2-4 under 35 U.S.C. § 103(a) as being unpatentable over Arfelli, and further in view of Vinegar et al. (U.S. Patent 4,571,491), Lazos et al. ("A Software Data Generator for Radiograph Imaging Investigations"), and Adriaansz (U.S. Patent 6,574,302) is respectfully traversed.

Arfelli is described above. Vinegar et al. describe a computed axial tomographic scanner (CAT). The CAT scans an unknown sample at both energies and applies measured attenuation coefficients from the scanning of an unknown sample along with energy coefficients in equations to determine a density and an atomic number for the unknown sample (column 6, lines 61-68).

Lazos et al. describe a method for developing and implementing an integrated software application used to create electronic phantoms, which can be subsequently subjected to a simulated X-ray imaging procedure to produce radiographic projection images (page 76, Introduction). Each of the images are composed on calculated intensity pixel values of transmitted radiation fluence reaching a detector (page 76, Introduction).

Adriaansz describes a method in which a value of a bone mineral density factor to be used can be looked up in a look-up table (column 4, lines 50-53). When the bone mineral density factor has been determined a priori, the values of this factor can be stored in a look-up table that is stored in a memory of a computer (column 4, lines 53-56).

Claims 2-4 depend, directly or indirectly, from independent Claim 1 which recites a method comprising "detecting components of plaque using a multi-energy computed tomography (MECT) system, wherein said detecting the components of the plaque includes generating a look-up table by using at least one phantom."

None of Arfelli, Vinegar et al., Lazos et al., and Adriaansz, considered alone or in combination, describe or suggest a method as recited in Claim 1. Specifically, none of Arfelli, Vinegar et al., Lazos et al., and Adriaansz, considered alone or in combination, describe or suggest generating a look-up table by using at least one phantom. Rather, Arfelli describes performing multi-energy imaging that facilitates a study of tissue characterization. Vinegar et al. describe scanning an unknown sample at both energies. Vinegar et al. further

describe applying, in equations, measured attenuation coefficients from the scanning of the unknown sample along with energy coefficients to determine a density and an atomic number for the unknown sample. Lazos et al. describe developing and implementing an integrated software application used to create electronic phantoms, which can be subsequently subjected to a simulated X-ray imaging procedure to produce radiographic projection images. Adriaansz describes viewing a value of a bone mineral density factor in a look-up table. Accordingly, none of Arfelli, Vinegar et al., Lazos et al., and Adriaansz, considered alone or in combination, describe or suggest generating a look-up table as recited in Claim 1. For the reasons set forth above, Claim 1 is submitted to be patentable over Arfelli, and further in view of Vinegar et al., Lazos et al., and Adriaansz.

When the recitations of Claims 2-4 are considered in combination with the recitations of Claim 1, Applicants submit that dependent Claims 2-4 likewise are patentable over Arfelli, and further in view of Vinegar et al., Lazos et al., and Adriaansz.

For the reasons set forth above, Applicants respectfully request that the Section 103 rejection of Claims 2-4 over Arfelli, and further in view of Vinegar et al., Lazos et al., and Adriaansz be withdrawn.

The rejection of Claim 5 and 6 under 35 U.S.C. § 103(a) as being unpatentable over Arfelli in view of Vinegar et al., Lazos et al., and Adriaansz, and further in view of Tsutsui et al. (U.S. Patent 5,396,530) is respectfully traversed.

Arfelli, Vinegar et al., Lazos et al., and Adriaansz are described above.

Tsutsui et al. describe an X-ray source that applies an application voltage of 100 kV to an X-ray tube of a constant voltage of 3 mV to generate an X-ray beam, and the X-ray energy spectrum is divided into two energy bands beforehand by using materials having an energy absorbing end at about 50 KeV denominated a K-edge filter (column 5, lines 16-24). An object is irradiated by the divided X-ray energy bands (column 5, lines 25-26). X-ray photons transmitted through the object are separated into two energy bands by using two discriminator comparators and a pulse counting measurement is conducted by using a one-dimensional semiconductor radiation detector (column 5, lines 27-34).

Claims 5 and 6 depend indirectly from independent Claim 1. None of Arfelli, Vinegar et al., Lazos et al., Adriaansz, and Tsutsui et al., considered alone or in combination,

describe or suggest a method as recited in Claim 1. Specifically, none of Arfelli, Vinegar et al., Lazos et al., Adriaansz, and Tsutsui et al., considered alone or in combination, describe or suggest generating a look-up table by using at least one phantom. Rather, Arfelli describes performing multi-energy imaging that facilitates a study of tissue characterization. Vinegar et al. describe scanning an unknown sample at both energies. Vinegar et al. further describe applying, in equations, measured attenuation coefficients from the scanning of the unknown sample along with energy coefficients to determine a density and an atomic number for the unknown sample. Lazos et al. describe developing and implementing an integrated software application used to create electronic phantoms, which can be subsequently subjected to a simulated X-ray imaging procedure to produce radiographic projection images. Adriaansz describes viewing a value of a bone mineral density factor in a look-up table. Tsutsui et al. describe separating X-ray photons transmitted through an object into two energy bands by using two discriminator comparators and conducting a pulse counting measurement by using a one-dimensional semiconductor radiation detector. Accordingly, none of Arfelli, Vinegar et al., Lazos et al., Adriaansz, and Tsutsui et al., considered alone or in combination, describe or suggest generating a look-up table as recited in Claim 1. For the reasons set forth above, Claim 1 is submitted to be patentable over Arfelli in view of Vinegar et al., Lazos et al., and Adriaansz, and further in view of Tsutsui et al.

When the recitations of Claims 5 and 6 are considered in combination with the recitations of Claim 1, Applicants submit that dependent Claims 5 and 6 likewise are patentable over Arfelli in view of Vinegar et al., Lazos et al., and Adriaansz, and further in view of Tsutsui et al.

For the reasons set forth above, Applicants respectfully request that the Section 103 rejection of Claims 5-6 over Arfelli in view of Vinegar et al., Lazos et al., and Adriaansz, and further in view of Tsutsui et al. be withdrawn.

The rejection of Claim 7 under 35 U.S.C. § 103(a) as being unpatentable over Arfelli and further in view of Walters is respectfully traversed.

Arfelli and Walters are described above.

Claim 7 depends directly from independent Claim 1. Neither Arfelli nor Walters, considered alone or in combination, describe or suggest a method as recited in Claim 1.

Specifically, neither Arfelli nor Walters, considered alone or in combination, describe or suggest generating a look-up table by using at least one phantom. Rather, Arfelli describes performing multi-energy imaging that facilitates a study of tissue characterization. Walters describes performing two scans at a combined dose equal to a dose that would have been used if a single energy scan approach is used. Accordingly, neither Arfelli nor Walters, considered alone or in combination, describe or suggest generating as recited in Claim 1. For the reasons set forth above, Claim 1 is submitted to be patentable over Arfelli and further in view of Walters.

When the recitations of Claim 7 are considered in combination with the recitations of Claim 1, Applicants submit that dependent Claim 7 likewise is patentable over Arfelli and further in view of Walters.

For the reasons set forth above, Applicants respectfully request that the Section 103 rejection of Claim 7 over Arfelli and further in view of Walters be withdrawn.

The rejection of Claim 8 under 35 U.S.C. § 103(a) as being unpatentable over Arfelli and further in view of Teirstein et al. (U.S. Patent Application 2001/0018042) and Walters is respectfully traversed.

Arfelli and Walters are described above.

Teirstein et al. describe in vivo methods for detection of vulnerable plaque in a subject in need thereof (abstract). In the method, the subject is administered a diagnostic amount of a biologically compatible detectable lipid-avid agent, the detectable lipid-avid agent is allowed to penetrate arterial walls and attach to any lipid accumulations of oxidized LDL-cholesterol in arterial walls in the wall of an artery, unbound detectable lipid-avid agent is allowed to clear from the subject by natural processes, and a presence of the detectable lipid-avid agent attached to the lipid accumulation in the wall of the artery is detected (abstract).

Claim 8 depends directly from independent Claim 1. None of Arfelli, Teirstein et al., and Walters, considered alone or in combination, describe or suggest a method as recited in Claim 1. Specifically, none of Arfelli, Teirstein et al., and Walters, considered alone or in combination, considered alone or in combination, describe or suggest generating a look-up table by using at least one phantom. Rather, Arfelli describes performing multi-energy

imaging that facilitates a study of tissue characterization. Teirstein et al. describe administering a subject with diagnostic amount of a biologically compatible detectable lipid-avid agent. Walters describes performing two scans at a combined dose equal to a dose that would have been used if a single energy scan approach is used. Accordingly, none of Arfelli, Teirstein et al., and Walters, considered alone or in combination, describe or suggest generating a look-up table as recited in Claim 1. For the reasons set forth above, Claim 1 is submitted to be patentable over Arfelli and further in view of Teirstein et al. and Walters.

When the recitations of Claim 8 are considered in combination with the recitations of Claim 1, Applicants submit that dependent Claim 8 likewise is patentable over Arfelli and further in view of Teirstein et al. and Walters.

For the reasons set forth above, Applicants respectfully request that the Section 103 rejection of Claim 8 over Arfelli and further in view of Teirstein et al. and Walters be withdrawn.

The rejection of Claim 9 under 35 U.S.C. § 103(a) as being unpatentable over Arfelli and further in view of Falotico et al. (U.S. Patent Application 2003/0060877) and Walters is respectfully traversed.

Arfelli and Walters are described above.

Falotico et al. describe new diagnostic technologies to identify a location of vulnerable plaques in a plurality of coronary arteries (paragraph 26). The new technologies include refined magnetic resonance imaging (MRI), thermal sensors that measure a temperature of an arterial wall on a premise that an inflammatory process generates heat, elasticity sensors, intravascular ultrasound, optical coherence tomography (OCT), contrast agents, and near-infrared and infrared light (paragraph 26).

Claim 9 depends directly from independent Claim 1. None of Arfelli, Falotico et al., and Walters, considered alone or in combination, describe or suggest a method as recited in Claim 1. Specifically, none of Arfelli, Falotico et al., and Walters, considered alone or in combination, considered alone or in combination, describe or suggest generating a look-up table by using at least one phantom. Rather, Arfelli describes performing multi-energy imaging that facilitates a study of tissue characterization. Falotico et al. describe identifying a location of vulnerable plaques in a plurality of coronary arteries by using contrast agents.

Walters describes performing two scans at a combined dose equal to a dose that would have been used if a single energy scan approach is used. Accordingly, none of Arfelli, Falotico et al., and Walters, considered alone or in combination, describe or suggest generating a look-up table as recited in Claim 1. For the reasons set forth above, Claim 1 is submitted to be patentable over Arfelli and further in view of Falotico et al. and Walters.

When the recitations of Claim 9 are considered in combination with the recitations of Claim 1, Applicants submit that dependent Claim 9 likewise is patentable over Arfelli and further in view of Falotico et al. and Walters.

For the reasons set forth above, Applicants respectfully request that the Section 103 rejection of Claim 9 over Arfelli and further in view of Falotico et al. and Walters be withdrawn.

The rejection of Claim 10 under 35 U.S.C. § 103(a) as being unpatentable over Arfelli and further in view of Arnold (U.S. Patent 5,335,260) is respectfully traversed.

Arfelli is described above.

Arnold describes a method that utilizes an improved calibration phantom formed of a material which simulates properties of human tissue and contains calcium in a stable configuration (column 2, lines 48-54). The method provides improved accuracy and precision in quantification of calcium, bone mass and bone density by using conventional X-ray equipment (column 2, lines 48-54).

Claim 10 depends directly from independent Claim 1. Neither Arfelli nor Arnold, considered alone or in combination, describe or suggest a method as recited in Claim 1. Specifically, neither Arfelli nor Arnold, considered alone or in combination, considered alone or in combination, describe or suggest generating a look-up table by using at least one phantom. Rather, Arfelli describes performing multi-energy imaging that facilitates a study of tissue characterization. Arnold describes providing improved accuracy and precision in quantification of calcium, bone mass and bone density. Accordingly, neither Arfelli nor Arnold, considered alone or in combination, describe or suggest generating a look-up table as recited in Claim 1. For the reasons set forth above, Claim 1 is submitted to be patentable over Arfelli, and further in view of Arnold.

When the recitations of Claim 10 are considered in combination with the recitations of Claim 1, Applicants submit that dependent Claim 10 likewise is patentable over Arfelli, and further in view of Arnold.

For the reasons set forth above, Applicants respectfully request that the Section 103 rejection of Claim 10 over Arfelli, and further in view of Arnold be withdrawn.

The rejection of Claim 11 under 35 U.S.C. § 103(a) as being unpatentable over Arfelli in view of Arnold, and further in view of Kaufman et al. (U.S. Patent Application Publication 2003/0095693) is respectfully traversed.

Arfelli and Arnold are described above.

Kaufman et al. describe coronary artery calcium quantitation that is a major focus in the effort to assess risk for coronary heart disease, to monitor progression of plaque development, and to potentially assess therapies and interventions designed to reduce mortality from coronary heart disease (paragraph 4). Although a rupture of soft plaque and subsequent thrombus formation is a major precursor of acute coronary events, in most individuals it is believed that coronary calcium burden is also a valid surrogate or indicator of total plaque burden, including soft plaque (paragraph 4).

Claim 11 depends indirectly from independent Claim 1. None of Arfelli, Arnold, and Kaufman et al., considered alone or in combination, describe or suggest a method as recited in Claim 1. Specifically, none of Arfelli, Arnold, and Kaufman et al., considered alone or in combination, considered alone or in combination, describe or suggest generating a look-up table by using at least one phantom. Rather, Arfelli describes performing multi-energy imaging that facilitates a study of tissue characterization. Arnold describes providing improved accuracy and precision in quantification of calcium, bone mass and bone density. Kaufman et al. describe indicating total plaque burden by quantifying coronary calcium burden. Accordingly, none of Arfelli, Arnold, and Kaufman et al., considered alone or in combination, describe or suggest generating a look-up table as recited in Claim 1. For the reasons set forth above, Claim 1 is submitted to be patentable over Arfelli in view of Arnold, and further in view of Kaufman et al.

When the recitations of Claim 11 are considered in combination with the recitations of Claim 1, Applicants submit that dependent Claim 11 likewise is patentable over Arfelli in view of Arnold, and further in view of Kaufman et al.

For the reasons set forth above, Applicants respectfully request that the Section 103 rejection of Claim 11 over Arfelli in view of Arnold, and further in view of Kaufman et al. be withdrawn.

The rejection of Claim 12 under 35 U.S.C. § 103(a) as being unpatentable over Arfelli, and further in view of Charles, Jr. et al. (U.S. Patent 6,816,564) and Fox et al. (U.S. Patent 5,668,846) is respectfully traversed.

Arfelli is described above.

Charles, Jr. et al. describe a method for generating an image of muscle tissue density based in part on a radiograph (column 15, lines 59-60). The method further includes generating an image of bone mineral density based in part on the radiograph (column 15, lines 61-62).

Fox et al. describe a method in which a three dimensional image may be nutated (column 7, lines 13-15). The image may be nutated with a nutation angle to display the three dimensional image from varying points of view (column 7, lines 13-15).

Claim 12 depends directly from independent Claim 1. None of Arfelli, Charles, Jr. et al., and Fox et al., considered alone or in combination, describe or suggest a method as recited in Claim 1. Specifically, none of Arfelli, Charles, Jr. et al., and Fox et al., considered alone or in combination, describe or suggest generating a look-up table by using at least one phantom. Rather, Arfelli describes performing multi-energy imaging that facilitates a study of tissue characterization. Charles, Jr. et al. describe generating an image of muscle tissue density based in part on a radiograph. Fox et al. describe nutating a three-dimensional image with a nutation angle to display the three dimensional image from varying points of view. Accordingly, none of Arfelli, Charles, Jr. et al., and Fox et al., considered alone or in combination, describe or suggest generating a look-up table as recited in Claim 1. For the reasons set forth above, Claim 1 is submitted to be patentable over Arfelli, and further in view of Charles, Jr. et al. and Fox et al.

When the recitations of Claim 12 are considered in combination with the recitations of Claim 1, Applicants submit that dependent Claim 12 likewise is patentable over Arfelli, and further in view of Charles, Jr. et al. and Fox et al.

For the reasons set forth above, Applicants respectfully request that the Section 103 rejection of Claim 12 over Arfelli, and further in view of Charles, Jr. et al. and Fox et al. be withdrawn.

The rejection of Claim 13 under 35 U.S.C. § 103(a) as being unpatentable over Arfelli, and further in view of Vaillant et al. (EP 1087339), Regulla et al. (U.S. Patent 6,001,054), Gayer et al. (U.S. Patent 6,094,467), and Walters is respectfully traversed.

Arfelli and Walters are described above.

Vaillant et al. describe a method in which stents are placed in coronary arteries (paragraph 3). The method also includes reconstructing a three-dimensional image of an element of interest like, for example, a vascular stent inserted in an organ such as a vessel (paragraph 5).

Regulla et al. describe a method for differential energy application for local dose enhancement of ionizing radiation. The method includes implanting a metallic stent which has not been made radioactive, to maintain a lumen of a carotid artery open to allow adequate flow of blood therethrough (column 4, lines 30-36).

Gayer et al. describe a method for improving visual definition in a CT X-ray image having high attenuation objects such as metal prostheses and implants (abstract). The method provides for determining extents of the high attenuation objects and reducing artifacts that the high attenuation objects cause in the image without completely removing the high attenuation objects from the image (abstract).

Claim 13 depends directly from independent Claim 1. None of Arfelli, Vaillant et al., Regulla et al., Gayer et al., and Walters, considered alone or in combination, describe or suggest a method as recited in Claim 1. Specifically, none of Arfelli, Vaillant et al., Regulla et al., Gayer et al., and Walters, considered alone or in combination, considered alone or in combination, describe or suggest generating a look-up table by using at least one phantom. Rather, Arfelli describes performing multi-energy imaging that facilitates a study of tissue

characterization. Vaillant describes reconstructing a three-dimensional image of an element of interest like, for example, a vascular stent inserted in an organ such as a vessel. Regulla et al. describe implanting a metallic stent which has not been made radioactive, to maintain a lumen of a carotid artery open to allow adequate flow of blood therethrough. Gayer et al. describe determining extents of high attenuation objects and reducing artifacts that the high attenuation objects cause in an image without completely removing the high attenuation objects from the image. Walters describes performing two scans at a combined dose equal to a dose that would have been used if a single energy scan approach is used. Accordingly, none of Arfelli, Vaillant et al., Regulla et al., Gayer et al., and Walters, considered alone or in combination, describe or suggest generating a look-up table as recited in Claim 1. For the reasons set forth above, Claim 1 is submitted to be patentable over Arfelli, and further in view of Vaillant et al., Regulla et al., Gayer et al., and Walters.

When the recitations of Claim 13 are considered in combination with the recitations of Claim 1, Applicants submit that dependent Claim 13 likewise is patentable over Arfelli, and further in view of Vaillant et al., Regulla et al., Gayer et al., and Walters.

For the reasons set forth above, Applicants respectfully request that the Section 103 rejection of Claim 13 over Arfelli, and further in view of Vaillant et al., Regulla et al., Gayer et al., and Walters be withdrawn.

The rejection of Claim 14 under 35 U.S.C. § 103(a) as being unpatentable over Arfelli in view of Vinegar et al. is respectfully traversed.

Arfelli and Vinegar et al. are described above.

Claim 14 recites a method for detecting components of plaque comprising "generating information regarding projection data of phantoms by using a multi-energy computed tomography (MECT) system; generating a look-up table by using one of the phantoms; and obtaining the components of the plaque from the information."

Neither Arfelli nor Vinegar et al., considered alone or in combination, describe or suggest a method for detecting components of plaque as recited in Claim 14. Specifically, neither Arfelli nor Vinegar et al., considered alone or in combination, describe or suggest generating a look-up table by using one of the phantoms. Rather, Arfelli describes performing multi-energy imaging that facilitates a study of tissue characterization. Vinegar

et al. describe scanning an unknown sample at both energies. Vinegar et al. further describe applying, in equations, measured attenuation coefficients from the scanning of the unknown sample along with energy coefficients to determine a density and an atomic number for the unknown sample. Accordingly, neither Arfelli nor Vinegar et al., considered alone or in combination, describe or suggest generating a look-up table as recited in Claim 14. For the reasons set forth above, Claim 14 is submitted to be patentable over Arfelli in view of Vinegar et al.

For the reasons set forth above, Applicants respectfully request that the Section 103 rejection of Claim 14 over Arfelli in view of Vinegar et al. be withdrawn.

The rejection of Claim 15 under 35 U.S.C. § 103(a) as being unpatentable over Schanen (U.S. Patent 5,218,533) in view of Arfelli is respectfully traversed.

Arfelli is described above.

Schanen describes a CT system. The CT system includes a CT gantry (16), that includes an x-ray source (10) oriented to project a fan beam of x-rays (24) from a focal spot (11) through an imaged object (12) to a detector array (18) (column 4, lines 31-36).

Claim 15 recites a multi-energy computed tomography (MECT) system comprising "at least one radiation source configured to transmit x-rays that intersect an object; at least one detector configured to detect the x-rays; a controller coupled to the detector; and a computer configured to: instruct the MECT system to detect components of plaque; and generate a look-up table by using at least one phantom."

Neither Schanen nor Arfelli, considered alone or in combination, describe or suggest a multi-energy computed tomography system as recited in Claim 15. Specifically, neither Schanen nor Arfelli, considered alone or in combination, describe or suggest a computer configured to generate a look-up table by using at least one phantom. Rather, Schanen describes a CT system that includes a CT gantry. The CT gantry includes an x-ray source oriented to project a fan beam of x-rays from a focal spot through an imaged object to a detector array. Arfelli describes performing multi-energy imaging that facilitates a study of tissue characterization. Accordingly, neither Schanen nor Arfelli, considered alone or in combination, describe or suggest a computer configured to generate a look-up table as recited

in Claim 15. For the reasons set forth above, Claim 15 is submitted to be patentable over Schanen in view of Arfelli.

For the reasons set forth above, Applicants respectfully request that the Section 103 rejection of Claim 15 over Schanen in view of Arfelli be withdrawn.

The rejection of Claims 16 and 17 under 35 U.S.C. § 103(a) as being unpatentable over Schanen in view of Arfelli, and further in view of Vinegar et al., Lazos et al., and Adriaansz is respectfully traversed.

Schanen, Arfelli, Vinegar et al., Lazos et al., and Adriaansz are described above.

Claim 16 and 17 depend, directly or indirectly, from independent Claim 15 which recites a multi-energy computed tomography (MECT) system comprising "at least one radiation source configured to transmit x-rays that intersect an object; at least one detector configured to detect the x-rays; a controller coupled to the detector; and a computer configured to: instruct the MECT system to detect components of plaque; and generate a look-up table by using at least one phantom."

None of Schanen, Arfelli, Vinegar et al., Lazos et al., and Adriaansz, considered alone or in combination, describe or suggest a multi-energy computed tomography system as recited in Claim 15. Specifically, none of Schanen, Arfelli, Vinegar et al., Lazos et al., and Adriaansz, considered alone or in combination, describe or suggest a computer configured to generate a look-up table by using at least one phantom. Rather, Schanen describes a CT system that includes a CT gantry. The CT gantry includes an x-ray source oriented to project a fan beam of x-rays from a focal spot through an imaged object to a detector array. Arfelli describes performing multi-energy imaging that facilitates a study of tissue characterization. Vinegar et al. further describe applying, in equations, measured attenuation coefficients from the scanning of the unknown sample along with energy coefficients to determine a density and an atomic number for the unknown sample. Lazos et al. describe developing and implementing an integrated software application used to create electronic phantoms, which can be subsequently subjected to a simulated X-ray imaging procedure to produce radiographic projection images. Adriaansz describes viewing a value of a bone mineral density factor in a look-up table. Accordingly, none of Schanen, Arfelli, Vinegar et al., Lazos et al., and Adriaansz, considered alone or in combination, describe or suggest a

computer configured to generate a look-up table as recited in Claim 15. For the reasons set forth above, Claim 15 is submitted to be patentable over Schanen in view of Arfelli, and further in view of Vinegar et al., Lazos et al., and Adriaansz.

When the recitations of Claims 16 and 17 are considered in combination with the recitations of Claim 15, Applicants submit that dependent Claims 16 and 17 likewise are patentable over Schanen in view of Arfelli, and further in view of Vinegar et al., Lazos et al., and Adriaansz.

For the reasons set forth above, Applicants respectfully request that the Section 103 rejection of Claims 16 and 17 over Schanen in view of Arfelli, and further in view of Vinegar et al., Lazos et al., and Adriaansz be withdrawn.

The rejection of Claim 18 under 35 U.S.C. § 103(a) as being unpatentable over Schanen in view of Arfelli, Vinegar et al., Lazos et al., and Adriaansz, and further in view of Aradate et al. (U.S. Patent Application Publication 2002/0131544) is respectfully traversed.

Schanen, Arfelli, Vinegar et al., Lazos et al., and Adriaansz are described above.

Aradate et al. describe at least one computer-readable medium or memory for storing data structures, tables, records, or other data (paragraph 65). Examples of the computer-readable media are compact discs, hard disks, floppy disks, tape, magneto-optical disks, PROMs (EPROM, EEPROM, Flash EPROM), DRAM, SRAM, and SDRAM (paragraph 65).

Claim 18 depends indirectly from independent Claim 15. None of Schanen, Arfelli, Vinegar et al., Lazos et al., Adriaansz, and Aradate et al., considered alone or in combination, describe or suggest a multi-energy computed tomography system as recited in Claim 15. Specifically, none of Schanen, Arfelli, Vinegar et al., Lazos et al., Adriaansz, and Aradate et al., considered alone or in combination, describe or suggest a computer configured to generate a look-up table by using at least one phantom. Rather, Schanen describes a CT system that includes a CT gantry. The CT gantry includes an x-ray source oriented to project a fan beam of x-rays from a focal spot through an imaged object to a detector array. Arfelli describes performing multi-energy imaging that facilitates a study of tissue characterization. Vinegar et al. further describe applying, in equations, measured attenuation coefficients from the scanning of the unknown sample along with energy coefficients to determine a density and an atomic number for the unknown sample. Lazos et al. describe developing and

implementing an integrated software application used to create electronic phantoms, which can be subsequently subjected to a simulated X-ray imaging procedure to produce radiographic projection images. Adriaansz describes viewing a value of a bone mineral density factor in a look-up table. Aradate et al. describe at least one computer-readable medium or memory for storing data structures, tables, records, or other data. Accordingly, none of Schanen, Arfelli, Vinegar et al., Lazos et al., Adriaansz, and Aradate et al., considered alone or in combination, describe or suggest a computer configured to generate a look-up table as recited in Claim 15. For the reasons set forth above, Claim 15 is submitted to be patentable over Schanen in view of Arfelli, Vinegar et al., Lazos et al., and Adriaansz, and further in view of Aradate et al.

When the recitations of Claim 18 are considered in combination with the recitations of Claim 15, Applicants submit that dependent Claim 18 likewise is patentable over Schanen in view of Schanen in view of Arfelli, Vinegar et al., Lazos et al., and Adriaansz, and further in view of Aradate et al.

For the reasons set forth above, Applicants respectfully request that the Section 103 rejection of Claim 18 over Schanen in view of Arfelli, Vinegar et al., Lazos et al., and Adriaansz, and further in view of Aradate et al. be withdrawn.

The rejection of Claim 19 under 35 U.S.C. § 103(a) as being unpatentable over Schanen in view of Arfelli, and further in view of Walters and Aradate et al. is respectfully traversed.

Schanen, Arfelli, Walters and Aradate et al. are described above.

Claim 19 depends directly from independent Claim 15. None of Schanen, Arfelli, Walters, and Aradate et al., considered alone or in combination, describe or suggest a multi-energy computed tomography system as recited in Claim 15. Specifically, none of Schanen, Arfelli, Walters, and Aradate et al., considered alone or in combination, describe or suggest a computer configured to generate a look-up table by using at least one phantom. Rather, Schanen describes a CT system that includes a CT gantry. The CT gantry includes an x-ray source oriented to project a fan beam of x-rays from a focal spot through an imaged object to a detector array. Arfelli describes performing multi-energy imaging that facilitates a study of tissue characterization. Walters describes performing two scans at a combined dose equal to

a dose that would have been used if a single energy scan approach is used. Aradate et al. describe at least one computer-readable medium or memory for storing data structures, tables, records, or other data. Accordingly, none of Schanen, Arfelli, Walters, and Aradate et al., considered alone or in combination, describe or suggest a computer configured to generate a look-up table as recited in Claim 15. For the reasons set forth above, Claim 15 is submitted to be patentable over Schanen in view of Arfelli, and further in view of Walters and Aradate et al.

When the recitations of Claim 19 are considered in combination with the recitations of Claim 15, Applicants submit that dependent Claim 19 likewise is patentable over Schanen in view of Arfelli, and further in view of Walters and Aradate et al.

For the reasons set forth above, Applicants respectfully request that the Section 103 rejection of Claim 18 over Schanen in view of Arfelli, and further in view of Walters and Aradate et al. be withdrawn.

The rejection of Claim 20 under 35 U.S.C. § 103(a) as being unpatentable over Schanen in view of Arfelli, and further in view of Teirstein et al., Walters and Aradate et al. is respectfully traversed.

Schanen, Arfelli, Teirstein et al., Walters, and Aradate et al. are described above.

Claim 20 depends directly from independent Claim 15. None of Schanen, Arfelli, Teirstein et al., Walters, and Aradate et al., considered alone or in combination, describe or suggest a multi-energy computed tomography system as recited in Claim 15. Specifically, none of Schanen, Arfelli, Teirstein et al., Walters, and Aradate et al., considered alone or in combination, describe or suggest a computer configured to generate a look-up table by using at least one phantom. Rather, Schanen describes a CT system that includes a CT gantry. The CT gantry includes an x-ray source oriented to project a fan beam of x-rays from a focal spot through an imaged object to a detector array. Arfelli describes performing multi-energy imaging that facilitates a study of tissue characterization. Teirstein et al. describe administering a subject with diagnostic amount of a biologically compatible detectable lipid-avid agent. Walters describes performing two scans at a combined dose equal to a dose that would have been used if a single energy scan approach is used. Aradate et al. describe at least one computer-readable medium or memory for storing data structures, tables, records, or

other data. Accordingly, none of Schanen, Arfelli, Teirstein et al., Walters, and Aradate et al., considered alone or in combination, describe or suggest a computer configured to generate a look-up table as recited in Claim 15. For the reasons set forth above, Claim 15 is submitted to be patentable over Schanen in view of Arfelli, and further in view of Teirstein et al., Walters and Aradate et al.

When the recitations of Claim 20 are considered in combination with the recitations of Claim 15, Applicants submit that dependent Claim 20 likewise is patentable over Schanen in view of Arfelli, and further in view of Teirstein et al., Walters and Aradate et al.

For the reasons set forth above, Applicants respectfully request that the Section 103 rejection of Claim 20 over Schanen in view of Arfelli, and further in view of Teirstein et al., Walters and Aradate et al. be withdrawn.

The rejection of Claim 21 under 35 U.S.C. § 103(a) as being unpatentable over Schanen in view of Arfelli, and further in view of Falotico et al., Walters, and Aradate et al. is respectfully traversed.

Schanen, Arfelli, Falotico et al., Walters, and Aradate et al. are described above.

Claim 21 depends directly from independent Claim 15. None of Schanen, Arfelli, Falotico et al., Walters, and Aradate et al., considered alone or in combination, describe or suggest a multi-energy computed tomography system as recited in Claim 15. Specifically, none of Schanen, Arfelli, Falotico et al., Walters, and Aradate et al., considered alone or in combination, describe or suggest a computer configured to generate a look-up table by using at least one phantom. Rather, Schanen describes a CT system that includes a CT gantry. The CT gantry includes an x-ray source oriented to project a fan beam of x-rays from a focal spot through an imaged object to a detector array. Arfelli describes performing multi-energy imaging that facilitates a study of tissue characterization. Falotico et al. describe identifying a location of vulnerable plaques in a plurality of coronary arteries by using contrast agents. Walters describes performing two scans at a combined dose equal to a dose that would have been used if a single energy scan approach is used. Aradate et al. describe at least one computer-readable medium or memory for storing data structures, tables, records, or other data. Accordingly, none of Schanen, Arfelli, Falotico et al., Walters, and Aradate et al., considered alone or in combination, describe or suggest a computer configured to generate a

look-up table as recited in Claim 15. For the reasons set forth above, Claim 15 is submitted to be patentable over Schanen in view of Arfelli, and further in view of Falotico et al., Walters, and Aradate et al.

When the recitations of Claim 21 are considered in combination with the recitations of Claim 15, Applicants submit that dependent Claim 21 likewise is patentable over Schanen in view of Arfelli, and further in view of Falotico et al., Walters, and Aradate et al.

For the reasons set forth above, Applicants respectfully request that the Section 103 rejection of Claim 21 over Schanen in view of Arfelli, and further in view of Falotico et al., Walters, and Aradate et al. be withdrawn.

The rejection of Claim 22 under 35 U.S.C. § 103(a) as being unpatentable over Schanen in view of Arfelli, and further in view of Arnold is respectfully traversed.

Schanen, Arfelli, and Arnold are described above.

Claim 22 depends directly from independent Claim 15. None of Schanen, Arfelli, and Arnold, considered alone or in combination, describe or suggest a multi-energy computed tomography system as recited in Claim 15. Specifically, none of Schanen, Arfelli, and Arnold, considered alone or in combination, describe or suggest a computer configured to generate a look-up table by using at least one phantom. Rather, Schanen describes a CT system that includes a CT gantry. The CT gantry includes an x-ray source oriented to project a fan beam of x-rays from a focal spot through an imaged object to a detector array. Arfelli describes performing multi-energy imaging that facilitates a study of tissue characterization. Arnold describes providing improved accuracy and precision in quantification of calcium, bone mass and bone density. Accordingly, none of Schanen, Arfelli, and Arnold, considered alone or in combination, describe or suggest a computer configured to generate a look-up table as recited in Claim 15. For the reasons set forth above, Claim 15 is submitted to be patentable over Schanen in view of Arfelli, and further in view of Arnold.

When the recitations of Claim 22 are considered in combination with the recitations of Claim 15, Applicants submit that dependent Claim 22 likewise is patentable over Schanen in view of Arfelli, and further in view of Arnold.

For the reasons set forth above, Applicants respectfully request that the Section 103 rejection of Claim 22 over Schanen in view of Arfelli, and further in view of Arnold be withdrawn.

The rejection of Claim 23 under 35 U.S.C. § 103(a) as being unpatentable over Schanen in view of Arfelli and Arnold, and further in view of Kaufman et al. is respectfully traversed.

Schanen, Arfelli, Arnold, and Kaufman et al. are described above.

Claim 23 depends indirectly from independent Claim 15. None of Schanen, Arfelli, Arnold, and Kaufman et al., considered alone or in combination, describe or suggest a multi-energy computed tomography system as recited in Claim 15. Specifically, none of Schanen, Arfelli, Arnold, and Kaufman et al., considered alone or in combination, describe or suggest a computer configured to generate a look-up table by using at least one phantom. Rather, Schanen describes a CT system that includes a CT gantry. The CT gantry includes an x-ray source oriented to project a fan beam of x-rays from a focal spot through an imaged object to a detector array. Arfelli describes performing multi-energy imaging that facilitates a study of tissue characterization. Arnold describes providing improved accuracy and precision in quantification of calcium, bone mass and bone density. Kaufman et al. describe indicating total plaque burden by quantifying coronary calcium burden. Accordingly, none of Schanen, Arfelli, Arnold, and Kaufman et al., considered alone or in combination, describe or suggest a computer configured to generate a look-up table as recited in Claim 15. For the reasons set forth above, Claim 15 is submitted to be patentable over Schanen in view of Arfelli and Arnold, and further in view of Kaufman et al..

When the recitations of Claim 23 are considered in combination with the recitations of Claim 15, Applicants submit that dependent Claim 23 likewise is patentable over Schanen in view of Arfelli and Arnold, and further in view of Kaufman et al.

The rejection of Claim 24 under 35 U.S.C. § 103(a) as being unpatentable over Schanen in view of Arfelli, and further in view of Charles, Jr. et al., Fox et al. and Aradate et al. is respectfully traversed.

Schanen, Arfelli, Charles, Jr. et al., Fox et al. and Aradate et al. are described above.

Claim 24 depends directly from independent Claim 15. None of Schanen, Arfelli, Charles, Jr. et al., Fox et al. and Aradate et al., considered alone or in combination, describe or suggest a multi-energy computed tomography system as recited in Claim 15. Specifically, none of Schanen, Arfelli, Charles, Jr. et al., Fox et al. and Aradate et al., considered alone or in combination, describe or suggest a computer configured to generate a look-up table by using at least one phantom. Rather, Schanen describes a CT system that includes a CT gantry. The CT gantry includes an x-ray source oriented to project a fan beam of x-rays from a focal spot through an imaged object to a detector array. Arfelli describes performing multi-energy imaging that facilitates a study of tissue characterization. Charles, Jr. et al. describe generating an image of muscle tissue density based in part on a radiograph. Fox et al. describe nutating a three-dimensional image with a nutation angle to display the three dimensional image from varying points of view. Aradate et al. describe at least one computer-readable medium or memory for storing data structures, tables, records, or other data. Accordingly, none of Schanen, Arfelli, Charles, Jr. et al., Fox et al. and Aradate et al., considered alone or in combination, describe or suggest a computer configured to generate a look-up table as recited in Claim 15. For the reasons set forth above, Claim 15 is submitted to be patentable over Schanen in view of Arfelli, and further in view of Charles, Jr. et al., Fox et al., and Aradate et al.

When the recitations of Claim 24 are considered in combination with the recitations of Claim 15, Applicants submit that dependent Claim 24 likewise is patentable over Schanen in view of Arfelli, and further in view of Charles, Jr. et al., Fox et al., and Aradate et al.

For the reasons set forth above, Applicants respectfully request that the Section 103 rejection of Claim 24 over Schanen in view of Arfelli, and further in view of Charles, Jr. et al., Fox et al., and Aradate et al. be withdrawn.

The rejection of Claim 25 under 35 U.S.C. § 103(a) as being unpatentable over Schanen in view of Arfelli, and further in view of Vaillant et al., Regulla et al., Gayer et al., and Walters is respectfully traversed.

Schanen, Arfelli, Vaillant et al., Regulla et al., Gayer et al., and Walters are described above.

Claim 25 depends directly from independent Claim 15. None of Schanen, Arfelli, Vaillant et al., Regulla et al., Gayer et al., and Walters, considered alone or in combination, describe or suggest a multi-energy computed tomography system as recited in Claim 15. Specifically, none of Schanen, Arfelli, Vaillant et al., Regulla et al., Gayer et al., and Walters, considered alone or in combination, describe or suggest a computer configured to generate a look-up table by using at least one phantom. Rather, Schanen describes a CT system that includes a CT gantry. The CT gantry includes an x-ray source oriented to project a fan beam of x-rays from a focal spot through an imaged object to a detector array. Arfelli describes performing multi-energy imaging that facilitates a study of tissue characterization. Vaillant describes reconstructing a three-dimensional image of an element of interest like, for example, a vascular stent inserted in an organ such as a vessel. Regulla et al. describe implanting a metallic stent which has not been made radioactive, to maintain a lumen of a carotid artery open to allow adequate flow of blood therethrough. Gayer et al. describe determining extents of high attenuation objects and reducing artifacts that the high attenuation objects cause in an image without completely removing the high attenuation objects from the image. Walters describes performing two scans at a combined dose equal to a dose that would have been used if a single energy scan approach is used. Accordingly, none of Schanen, Arfelli, Vaillant et al., Regulla et al., Gayer et al., and Walters, considered alone or in combination, describe or suggest a computer configured to generate a look-up table as recited in Claim 15. For the reasons set forth above, Claim 15 is submitted to be patentable over Schanen in view of Arfelli, and further in view of Vaillant et al., Regulla et al., Gayer et al., and Walters.

When the recitations of Claim 25 are considered in combination with the recitations of Claim 15, Applicants submit that dependent Claim 25 likewise is patentable over Schanen in view of Arfelli, and further in view of Vaillant et al., Regulla et al., Gayer et al., and Walters.

For the reasons set forth above, Applicants respectfully request that the Section 103 rejection of Claim 25 over Schanen in view of Arfelli, and further in view of Vaillant et al., Regulla et al., Gayer et al., and Walters be withdrawn.

The rejection of Claims 26 and 27 under 35 U.S.C. § 103(a) as being unpatentable over Arfelli in view of Zmora (U.S. Patent 6,028,909) is respectfully traversed.

Arfelli is described above.

Zmora describes a computer-based system and a method for correction of artifacts in computed tomography images (column 8, lines 24-25). The method could be programmed in a computer initially, or added later in an upgraded software package (column 8, lines 25-27).

Claim 26 recites a computer readable medium encoded with "a program configured to instruct a computer to detect components of plaque within an object that is scanned using a multi-energy tomography (MECT)system, the program further configured to instruct the computer to generate, by using at least one phantom, a look-up table that maps different densities of a selected basis material of the phantom to projection data for different energy spectra."

Neither Arfelli nor Zmora, considered alone or in combination, describe or suggest a computer readable medium as recited in Claim 26. Specifically, neither Arfelli nor Zmora, considered alone or in combination, describe or suggest a program further configured to instruct the computer to generate, by using at least one phantom, a look-up table that maps different densities of a selected basis material of the phantom to projection data for different energy spectra. Rather, Arfelli describes performing multi-energy imaging that facilitates a study of tissue characterization. Zmora describes a method for correction of artifacts in computed tomography images. The method could be programmed in a computer initially, or added later in an upgraded software package. Accordingly, neither Arfelli nor Zmora, considered alone or in combination, describe or suggest a program further configured to instruct the computer to generate, by using at least one phantom, a look-up table as recited in Claim 26. For the reasons set forth above, Claim 26 is submitted to be patentable over Arfelli in view of Zmora.

Claim 27 recites a computer encoded with "a program configured to instruct an MECT system to detect components of plaque within an object that is scanned using the MECT system, the program further configured to instruct the computer to generate, by using at least one phantom, a look-up table that maps different densities of a selected basis material of the phantom to projection data for different energy spectra."

Neither Arfelli nor Zmora, considered alone or in combination, describe or suggest a computer as recited in Claim 27. Specifically, neither Arfelli nor Zmora, considered alone or

in combination, describe or suggest the program further configured to instruct the computer to generate, by using at least one phantom, a look-up table that maps different densities of a selected basis material of the phantom to projection data for different energy spectra. Rather, Arfelli describes performing multi-energy imaging that facilitates a study of tissue characterization. Zmora describes a method for correction of artifacts in computed tomography images. The method could be programmed in a computer initially, or added later in an upgraded software package. Accordingly, neither Arfelli nor Zmora, considered alone or in combination, describe or suggest the program further configured to instruct the computer to generate, by using at least one phantom, a look-up table as recited in Claim 27. For the reasons set forth above, Claim 27 is submitted to be patentable over Arfelli in view of Zmora.

For the reasons set forth above, Applicants respectfully request that the Section 103 rejection of Claims 26 and 27 over Arfelli in view of Zmora be withdrawn.

Moreover, Applicants respectfully submit that the Section 103 rejections of Claims 2-27 are not proper rejections. As is well established, obviousness cannot be established by combining the teachings of the cited art to produce the claimed invention, absent some teaching, suggestion, or incentive supporting the combination. None of Arfelli, Vinegar et al., Lazos et al., Adriaansz, Tsutsui et al., Walters, Teirstein et al., Falotico et al., Arnold, Kaufman et al., Charles, Jr. et al., Fox et al., Vaillant et al., Regulla et al., Gayer et al., Schanen, Aradate et al., and Zmora, considered alone or in combination, describe or suggest the claimed combination. Furthermore, in contrast to the assertion within the Office Action, Applicants respectfully submit that it would not be obvious to one skilled in the art to combine Arfelli with Vinegar et al., Lazos et al., Adriaansz, Tsutsui et al., Walters, Teirstein et al., Falotico et al., Arnold, Kaufman et al., Charles, Jr. et al., Fox et al., Vaillant et al., Regulla et al., Gayer et al., Schanen, Aradate et al., or Zmora because there is no motivation to combine the references suggested in the cited art itself.

As the Federal Circuit has recognized, obviousness is not established merely by combining references having different individual elements of pending claims. Ex parte Levengood, 28 U.S.P.Q.2d 1300 (Bd. Pat. App. & Inter. 1993). MPEP 2143.01. Rather, there must be some suggestion, outside of Applicants' disclosure, in the prior art to combine such references, and a reasonable expectation of success must be both found in the prior art,

and not based on Applicants' disclosure. In re Vaeck, 20 U.S.P.Q.2d 1436 (Fed. Cir. 1991). In the present case, neither a suggestion or motivation to combine the prior art disclosures, nor any reasonable expectation of success has been shown.

Furthermore, it is impermissible to use the claimed invention as an instruction manual or "template" to piece together the teachings of the cited art so that the claimed invention is rendered obvious. Specifically, one cannot use hindsight reconstruction to pick and choose among isolated disclosures in the art to deprecate the claimed invention. Further, it is impermissible to pick and choose from any one reference only so much of it as will support a given position, to the exclusion of other parts necessary to the full appreciation of what such reference fairly suggests to one of ordinary skill in the art. The present Section 103 rejections are based on a combination of teachings selected from multiple patents in an attempt to arrive at the claimed invention. Specifically, Arfelli teaches performing multi-energy imaging that facilitates a study of tissue characterization. Vinegar et al. teach scanning an unknown sample at both energies. Vinegar et al. further teach applying, in equations, measured attenuation coefficients from the scanning of the unknown sample along with energy coefficients to determine a density and an atomic number for the unknown sample. Lazos et al. teach developing and implementing an integrated software application used to create electronic phantoms, which can be subsequently subjected to a simulated X-ray imaging procedure to produce radiographic projection images.

Moreover, Adriaansz teaches viewing a value of a bone mineral density factor in a look-up table. Tsutsui et al. teach separating X-ray photons transmitted through an object into two energy bands by using two discriminator comparators and conducting a pulse counting measurement by using a one-dimensional semiconductor radiation detector. Walters teaches performing two scans at a combined dose equal to a dose that would have been used if a single energy scan approach is used. Teirstein et al. teach administering a subject with diagnostic amount of a biologically compatible detectable lipid-avid agent. Falotico et al. teach identifying a location of vulnerable plaques in a plurality of coronary arteries by using contrast agents. Arnold teaches providing improved accuracy and precision in quantification of calcium, bone mass and bone density. Kaufman et al. teach indicating total plaque burden by quantifying coronary calcium burden. Charles, Jr. et al. teach generating an image of muscle tissue density based in part on a radiograph. Fox et al. teach

nutating a three-dimensional image with a nutation angle to display the three dimensional image from varying points of view.

Furthermore, Vaillant et al. teach reconstructing a three-dimensional image of an element of interest like, for example, a vascular stent inserted in an organ such as a vessel. Regulla et al. teach implanting a metallic stent which has not been made radioactive, to maintain a lumen of a carotid artery open to allow adequate flow of blood therethrough. Gayer et al. teach determining extents of high attenuation objects and reducing artifacts that the high attenuation objects cause in an image without completely removing the high attenuation objects from the image. Schanen teaches a CT system that includes a CT gantry. The CT gantry includes an x-ray source oriented to project a fan beam of x-rays from a focal spot through an imaged object to a detector array. Aradate et al. teach at least one computer-readable medium or memory for storing data structures, tables, records, or other data. Zmora teaches a method for correction of artifacts in computed tomography images. The method could be programmed in a computer initially, or added later in an upgraded software package. Since there is no teaching nor suggestion in the cited art for the combination, the Section 103 rejections appear to be based on a hindsight reconstruction in which isolated disclosures have been picked and chosen in an attempt to deprecate the present invention. Of course, such a combination is impermissible, and for this reason alone, Applicants request that the Section 103 rejections of Claims 2-27 be withdrawn.

For at least the reasons set forth above, Applicants respectfully request that the rejections of Claims 2-27 under 35 U.S.C. 103(a) be withdrawn.

In view of the foregoing amendments and remarks, all the claims now active in this application are believed to be in condition for allowance. Reconsideration and favorable action is respectfully solicited.

Respectfully Submitted,

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